

AMENDMENTS TO THE CLAIMS

Claims 1-8 (Cancelled)

Claim 9 (Currently Amended) A visual processing device comprising:

a visual processing unit operable to (i) determine a conversion characteristic for an image signal that has been input in accordance with information on surroundings obtained from a plurality of pixels surrounding a target pixel of an input image signal, (ii) convert the target pixel in accordance with the determined conversion characteristic characteristics, and (iii) output an output signal generated by performing visual processing to the image signal; and

a parameter output unit operable to output an adjustment parameter determined according to based on a parameter expressing the ambient light,

wherein ~~the visual processing unit outputs the output signal is generated by adjusting at least one of a the brightness and/or the and a local contrast of the image signal based on the a contrast between an average signal value of [[a]] the plurality of pixels surrounding the target pixel and the a value of the target pixel, and~~

wherein the visual processing unit corrects the a degree of the adjusting adjustment of the at least one of the brightness and/or and the local contrast of the image signal based on the adjustment parameter output by the parameter output unit, and

wherein the conversion characteristic is determined, such that within a predetermined input range of the image signal, and with respect to a specific value of the image signal, a corresponding value of the output signal monotonically decreases as a corresponding value of a processed signal, obtained by processing the input image signal, increases.

Claim 10 (Currently Amended) ~~The~~ A visual processing device comprising:

a spatial processing unit operable to (i) perform ~~[[a]]~~ predetermined spatial processing to an input image signal ~~that has been input, the predetermined spacial processing being performed based on a plurality of~~ by using pixels surrounding a target pixel of the image signal, and (ii) output a processed signal;

a visual processing unit operable to receive the image signal and the processed signal ~~as input~~, and output an output signal generated by performing visual processing to the image signal; and

a parameter output unit operable to output an adjustment parameter determined according to ~~based on a parameter expressing the~~ ambient light,

wherein ~~the visual processing unit outputs~~ the output signal is generated by adjusting at least one of a the brightness and ~~and/or the~~ a local contrast of the image signal based on ~~the~~ a contrast between the processed signal and the image signal, ~~and~~

wherein the visual processing unit corrects ~~the~~ a degree of the adjusting ~~adjustment~~ of the at least one of the brightness and ~~and/or the~~ local contrast of the image signal based on the adjustment parameter output by the parameter output unit, and

wherein the visual processing unit has a processing characteristic, such that within a predetermined input range of the image signal, and with respect to a specific value of the image signal, a corresponding value of the output signal monotonically decreases as a corresponding value of the processed signal increases.

Claim 11 (Cancelled)

Claim 12 (Currently Amended) The visual processing device according to claim 10,

wherein ~~the visual processing unit outputs an~~ the output signal is generated by enhancing the brightness of the image signal based on the contrast between the processed signal and the image signal, and ~~increases the~~ increasing a degree of the enhancement of the brightness of the image signal as ~~the~~ a brightness of the ambient light ~~increases becomes high, such that the degree~~ of the enhancement of the brightness is based on the adjustment parameter.

Claim 13 (Cancelled)

Claim 14 (Currently Amended) The visual processing device according to claim 10,

wherein the visual processing unit has a processing characteristic, such that $[[,]]$ within $[[a]]$ the predetermined input range of the image signal, and with respect to the specific value of the image signal, when the specific value of the image signal is equal to the corresponding value of the processed signal,

~~when the value of the image signal is fixed to a predetermined level, the value of the output signal monotonically decreases with respect to the value of the processed signal;~~

~~when the value of the image signal is equal to the value of the processed signal, the corresponding value of the output signal is upwardly convex upward with respect to the value of the image signal; and, such that~~

~~when the value of the image signal is equal to the value of the processed signal, the~~ a degree that the corresponding value of the output signal is upwardly convex upward ~~with respect to the value of the image signal is high~~ increases as ~~the~~ a brightness of the ambient light ~~becomes~~

high increases, such that the degree that the corresponding value of the output signal is upwardly convex is based on the adjustment parameter.

Claim 15 (Currently Amended) The visual processing device according to claim 10,

wherein ~~the visual processing unit outputs an output signal~~ is generated by broadening at least one of a difference and a ratio ~~difference/ratio~~ between the processed signal and the image signal based on the contrast between the processed signal and the image signal to enhance the local contrast, and ~~increasing~~ increases the a degree of the enhancement of the local contrast of the image signal as ~~the~~ a brightness of the ambient light ~~increases~~ becomes high, such that the degree of the enhancement of the local contrast is based on the adjustment parameter.

Claim 16 (Cancelled)

Claim 17 (Currently Amended) The visual processing device according to claim 10,

wherein the visual processing unit has a processing characteristic, such that ~~that~~ within ~~[[a]]~~ the predetermined input range of the image signal, and with respect to the specific value of the image signal, when the corresponding value of the processed signal is fixed to a predetermined level,

~~when the value of the image signal is fixed to a predetermined level, the value of the output signal monotonically decreases with respect to the value of the processed signal;~~

~~when the value of the processed signal is fixed to a predetermined level, the corresponding value of the output signal is downwardly convex downward with respect to the value of the image signal; and, such that~~

~~when the value of the processed signal is fixed to a predetermined level, the~~ degree that the ~~corresponding~~ value of the output signal is upwardly ~~convex-upward with respect to the value of the image signal is high~~ increases as the ~~a~~ brightness of the ambient light increases ~~becomes high, such that the degree that the corresponding value of the output signal is downwardly convex is based on the adjustment parameter.~~

Claims 18-20 (Cancelled)

Claim 21 (Currently Amended) An image display device comprising:

a visual processing unit operable to (i) determine a conversion characteristic ~~for an image signal that has been input~~ in accordance with information ~~on surroundings obtained~~ from a plurality of pixels surrounding a target pixel of an input image signal, (ii) convert the target pixel in accordance with the determined conversion characteristic, and (iii) output an output signal generated by performing visual processing to the image signal;

a display unit operable to display the output signal; and

a parameter output unit operable to output an adjustment parameter determined according to ~~based on a parameter expressing the~~ ambient light,

wherein ~~the visual processing unit outputs the output signal~~ is generated by adjusting at least one of a ~~the~~ brightness and ~~and/or the~~ a local contrast of the image signal based on ~~the~~ a contrast between an average signal value of ~~[[a]]~~ the plurality of pixels surrounding the target pixel and ~~the~~ a value of the target pixel, ~~and~~

wherein the visual processing unit corrects the a degree of the adjusting adjustment of the at least one of the brightness and and/or the local contrast of the image signal based on the adjustment parameter output by the parameter output unit, and

wherein the visual processing unit has a processing characteristic, such that within a predetermined input range of the image signal, and with respect to a specific value of the image signal, a corresponding value of the output signal monotonically decreases as a corresponding value of a processed signal, obtained by processing the input image signal, increases.

Claim 22 (Currently Amended) The image display device according to claim 21,
wherein the parameter output unit comprises a brightness detection unit operable to detect ~~the a~~ a brightness of ~~the a~~ a display environment of the display unit, and output the adjustment parameter in accordance with the brightness of the display environment detected by the brightness detection unit.

Claim 23 (Currently Amended) A visual processing method comprising:
determining a conversion characteristic ~~for an image signal that has been input~~ in accordance with information ~~on surroundings obtained~~ from a plurality of pixels surrounding a target pixel of an input image signal[[,]];

converting the target pixel in accordance with the determined conversion characteristic;
and

outputting an output signal generated by performing visual processing to the image signal; and

outputting an adjustment parameter determined according to ~~based on a parameter~~
expressing the ambient light,

wherein the output signal is generated by adjusting at least one of a ~~the~~ brightness and
~~and/or the~~ a local contrast of the image signal based on ~~the~~ a contrast between an average signal
value of ~~[[a]]~~ the plurality of pixels surrounding the target pixel and ~~the~~ a value of the target
pixel, ~~and~~

wherein a ~~the~~ degree of the adjusting ~~adjustment~~ of the at least one of the brightness and
~~and/or~~ the local contrast of the image signal is corrected based on the adjustment parameter
output by the outputting of the adjustment parameter, and

wherein the conversion characteristic is determined, such that within a predetermined
input range of the image signal, and with respect to a specific value of the image signal, a
corresponding value of the output signal monotonically decreases as a corresponding value of a
processed signal, obtained by processing the input image signal, increases.

Claim 24 (Currently Amended) A processor used for an image output device, the processor
~~executes the~~ executing a processes of:

determining a conversion characteristic ~~for an image signal that has been input~~ in
accordance with information ~~on surroundings obtained~~ from a plurality of pixels surrounding a
target pixel of an input image signal[[,]];

converting the target pixel in accordance with the determined conversion characteristic;
~~and~~

outputting an output signal generated by performing visual processing to the image
signal; and

outputting an adjustment parameter determined according to ~~based on a parameter~~
expressing the ambient light,

wherein the output signal is generated by adjusting at least one of a ~~the~~ brightness and
~~and/or the~~ a local contrast of the image signal based on ~~the~~ a contrast between an average signal
value of ~~[[a]]~~ the plurality of pixels surrounding the target pixel and ~~the~~ a value of the target
pixel, ~~and~~

wherein ~~a~~ the degree of the adjusting ~~adjustment~~ of the at least one of the brightness and
~~and/or~~ the local contrast of the image signal is corrected based on the adjustment parameter
output by the outputting of the adjustment parameter, and

wherein the conversion characteristic is determined, such that within a predetermined
input range of the image signal, and with respect to a specific value of the image signal, a
corresponding value of the output signal monotonically decreases as a corresponding value of a
processed signal, obtained by processing the input image signal, increases.

Claim 25 (Currently Amended) A non-transitory computer-readable recording medium
having storage medium storing an image processing program recorded thereon, the image
processing program that causes ~~causing~~ a computer to ~~perform~~ execute a visual processing
method, ~~the method~~ comprising:

determining a conversion characteristic ~~for an image signal that has been input~~ in
accordance with information ~~on surroundings obtained~~ from a plurality of pixels surrounding a
target pixel of an input image signal ~~[[,]]~~;

converting the target pixel in accordance with the determined conversion characteristic;
~~and~~

outputting an output signal generated by performing visual processing to the image signal; and

outputting an adjustment parameter determined according to ~~based on a parameter~~ expressing the ambient light,

wherein the output signal is generated by adjusting ~~the~~ at least one of a brightness and ~~and/or the~~ a local contrast of the image signal based on ~~the~~ a contrast between an average signal value of [[a]] the plurality of pixels surrounding the target pixel and ~~the~~ a value of the target pixel, and

wherein ~~the~~ the degree of the adjusting-adjustment of the at least one of the brightness and ~~and/or the~~ local contrast of the image signal is corrected based on the adjustment parameter output by the outputting of the adjustment parameter, and

wherein the conversion characteristic is determined, such that within a predetermined input range of the image signal, and with respect to a specific value of the image signal, a corresponding value of the output signal monotonically decreases as a corresponding value of a processed signal, obtained by processing the input image signal, increases.